

WITH THE COMPLIMENTS OF
Dr. J. MENZIES CAMPBELL,
14, BUCKINGHAM TERRACE,
GLASGOW, W.2.

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JOHN HUNTER

(1728-1793)

J. MENZIES CAMPBELL, D.D.S., L.D.S., F.I.C.D., F.R.S.E.
Glasgow, Scotland

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AN effort, however imperfect, is now being made to present a brief sketch of John Hunter's career, free from those entanglements of bias and fiction, so frequently associated with his name.

This remarkable man, the youngest of a family of ten, was born on February 13, 1728, at Long Calderwood (a small farm owned and worked by his father), which is about seven miles distant from Glasgow.

He was only thirteen years old when his father (*aet.* seventy-eight) died, without having, owing to advanced age, exercised the customary paternal restraint on him. From then onwards, John's upbringing devolved entirely on his mother, whose financial resources were very restricted.

His early education was decidedly rudimentary. Adverse to book-learning, he spent most of his time in the country districts of Lanarkshire, where his home was situated, studying various forms of natural history—animals, birds, fishes, plants, *etc.*: and closely observing all that was possible concerning them. In fact, he collected everything and dissected any dead specimens, that he came across on his excursions.

John's mother soon realized that she and her deceased husband had been unduly indulgent towards him. She

became convinced that he was misusing time, which should have been devoted to acquiring a solid foundation in the "Three R's", as reading, writing and arithmetic were often termed in rural Scotland.

As John's interests did not lie in these directions, his despairing mother arranged for his brother-in-law, George Buchanan, to take him into his cabinet-making business in Glasgow. Although John there closely watched the craftsmen at their benches, besides himself displaying considerable manual dexterity, he nevertheless remained restless and discontented. His innate desire was, undoubtedly, scientific observation and investigation.

It is not, therefore, surprising that, within a few weeks, he rebelled and decided to quit this work. There is no dubiety—loftier plans had been germinating in his brain.

His refined and scholarly brother, William (1718-1783), who later became the distinguished anatomist and leading obstetrician, had settled in London in 1741. In the winter of 1746, he had inaugurated private courses in anatomy. These proved so very successful, that they were continued throughout his career.

Not improbably, John desired to emulate him because their brother,

James, who had visited London sometime prior to 1745, had, on his return to Long Calderwood, recounted William's wonderful achievements. Doubtless, recollections of these inspired John to write to William in 1748 suggesting that he should join him as an assistant in the dissection-room.

The reply being favourable, John (then aged twenty years) did not delay departing on horseback on the fourteen days' journey to London. He arrived there in September of that year, when the brothers started to work together. One fact is crystal-clear: **BUT FOR WILLIAM HUNTER, THERE WOULD NOT HAVE BEEN THE RENOWNED JOHN HUNTER.**

The latter, in striking contrast to the former, was uncouth, addicted to swearing, and a *habitué* of taverns and theatre-galleries where low life abounded, nevertheless:

*There's a divinity that shapes our ends,
Rough-hew them how we will.*

William was soon fully convinced of John's extraordinary genius and ability. Consequently, he was not at all diffident in approaching William Cheselden (1688-1752), who was eminent throughout Europe as a surgeon, to permit his brother to attend Chelsea Hospital in order to become conversant with surgical practice under him. This request was readily granted. John remained there from 1749 till 1751, bandaging wounds and performing dressings: at the same time, being initiated into the rudiments of surgery.

When Cheselden became paralysed in 1751, John Hunter transferred to St. Bartholomew's Hospital to be a surgeon's-pupil under Percivall Pott

(1714-1788), who was then at his zenith. This entailed visiting the wards and being present at surgical operations.

John Hunter was thus singularly fortunate in having, so early in his career, been instructed by two of the best surgical teachers of the eighteenth century.

In order to gain further experience, and believing that his prospects would be brighter at St. George's Hospital, he attended a course of lectures there in 1754 and became a surgeon's-pupil.

In 1755, William persuaded John to enter St. Mary Hall (in 1902, incorporated with Oriel College), Oxford as a gentleman-commoner. Mystery surrounds this unexpected decision. Possibly, William's desire was for him to acquire some culture and an appreciation of the classics. John, however, remained there for less than two months! Not improbably, his uncouth manners and coarse humour failed to meet with the ready acceptance of his associates. When he returned to London, William assumed him a partner in the anatomical school.

Cadavers for dissection were then difficult to procure except through the "resurrectionists", *i.e.* those who performed clandestine exhumations. John was not only a close associate of these disreputable persons, but also one of their best clients. To enable him further to pursue the study of comparative anatomy, he approached the keeper of wild animals at the Tower of London to acquire any that died. With the same object in view, he searched widely and diligently purchasing every unusual dead animal he could find, not infrequently from the proprietors of circuses.

In May, 1756, he returned to St. George's Hospital in the rôle of house-surgeon. Although one or two years was then the usual period of service, he nevertheless resigned after only five months!

In 1760, in consequence of impaired health, John Hunter decided to apply for, and was granted, a commission as a staff-surgeon in the army.

In the spring of 1761, he was attached to the forces, which attacked Belleisle, off the west coast of France. As this assault resulted in considerable casualties particularly gun-shot wounds, John Hunter gained valuable experience in their treatment. Besides, there was a favourable opportunity for developing the study of natural history, especially the dissection of fishes. In 1762, he was on service in Portugal, where he was appointed surgeon to a hospital. There he continued to devote his leisure to scientific observations.

In May, 1763, having retired on half-pay from the army, he returned to London and lodged in Covent Garden.

Impecunious and devoid of those graces usually associated with a successful surgeon, he realized that expedients must be adopted in order to attract practice. He, therefore, decided to hold private classes (continued for many years) in anatomy and operative surgery.

According to a contemporary surgeon, Jessé Foot (1744-1826), a professional alliance existed from 1763 to 1768 between John Hunter and James Spence, a skilful dentist, who practised (with his two sons) first at Gray's Inn Lane, and later at Soho Square. The former attended at the latter's house, three times weekly, to advise Spence's

patients. The fees derived from this source were, at that period, Hunter's main income. As Foot had been a patient of Spence, this statement is very probably accurate.

In 1765, in order to observe fishes, reptiles, birds and animals more minutely, John Hunter purchased the ninety years' lease of two acres of land at Earl's Court, then about two miles distant from Hyde Park Corner, London. Thereon, he built a small house and stables, besides establishing a menagerie with an experimental centre. He (and later his wife and family) resided there for several months each year.

In 1766, John Hunter rented a house in Golden Square and embarked on his career proper as a surgeon. His extraordinary ability must, even then, have been widely recognized, because, in the following year, he was elected a Fellow of the Royal Society.

On July 7, 1768, he was granted the diploma of Membership of the Company of Surgeons, often erroneously termed the Corporation of Surgeons. Incidentally, this body was succeeded in 1800 by the Royal College of Surgeons in London. In 1843, the words 'in London' were altered to 'of England'.

In the same year, John Hunter transferred from Golden Square to 42, Jermyn Street, Piccadilly, where his brother, William, had been in practice for seventeen years. The latter had moved to Great Windmill Street where, a year earlier, he had founded the afterwards world-famed school of anatomy, which existed for about forty-seven years after his death in 1783.

In December, 1768, John Hunter (then aged forty years) was appointed a surgeon to St. George's Hospital, succeeding Thomas Gataker (d. 1769), who had held office since 1760. Hunter served in this capacity until his death, twenty-five years later.

It ought to be emphasized that, in pre-chloroform days, speed in operating was a very decided asset. John Hunter was more cautious and conscientious than rapid. Besides, his principle was never to operate if this could be avoided.

At that time, it was the perquisite of a surgical chief to share the hospital-pupils' fees. Also, to have resident-pupils, who were bound to him for periods ranging to five years; each paid £100 *per annum* in return for education, board and lodging in the surgeon's house.

Many of Hunter's pupils remained his staunch friends; several achieved international distinction. Here are a few of them. John Abernethy (1764-1831) was the pioneer in ligaturing the iliac artery for aneurysm. Astley Cooper (1768-1841), a brilliant and careful operator, whose annual income frequently exceeded £15,000, was knighted by George IV. Edward Jenner (1749-1823) discovered vaccination, and thus became an enthroned benefactor to humanity. Philip Syng Physick (1768-1837), who was born and died in Philadelphia, is termed the "Father of American Surgery." Having studied at the Philadelphia College of Medicine, in 1790 he became house-surgeon to John Hunter at St. George's Hospital. His preceptor must have held him in high esteem, because he invited him to remain in London to share his surgical

practice. Physick, however, decided to return to his native city, after having been granted, in 1791, the diploma of Membership of the Company of Surgeons; and, in the following year, graduated M.D., Edinburgh.

In May, 1771, John Hunter published his first book of any magnitude, *The Natural history of the human teeth: explaining their structure, use, formation, growth, and diseases*. A variant edition was also issued in the same year: and another in 1778. A Dutch and Latin translation was published in Dordrecht in 1773, and another at The Hague in 1780. In 1778, there appeared *A Practical treatise on the diseases of the teeth; intended as a supplement to the natural history of these parts*. A second edition of both books was issued in one volume in 1778, and a third in 1803. A Dutch translation of the second work was published in 1780; and, in the same year, a German edition of both books. In 1815, an Italian translation was issued. An American edition, with notes by Eleazar Parmly, was published in 1839 in the *American Journal of dental science*.

In 1771, John Hunter married Miss Anne Home (1742-1821), the daughter of an army surgeon: and a sister of Everard Home (1756-1832), who, in the following year, became one of his resident-pupils, and later his assistant. It has been stated that the profits, which accrued from the sale of Hunter's 1771 work on the teeth, enabled him to defray the expenses of his wedding. Incidentally, it has been recorded that, from 1763 to 1774, John Hunter's annual income never exceeded £1,000. Throughout his career, he did not exact high fees from his patients. In fact, his

charity was such that he did not charge anything in cases, where he knew that there was financial embarrassment.

Now for a few remarks on Mrs. John Hunter!

She was handsome, refined, artistic, exceedingly talented and fond of gaiety: somewhat of a *bas bleu!* In her home, she held weekly evening conversaziones attended by statesmen, scientists and most of the fashionable, artistic, and literary, highlights of the period. The great composer, Franz Joseph Haydn (1732-1809), was frequently there. In fact, Mrs. Hunter wrote the words of several of his canzonets, including *My Mother bids me bind my hair:* and a libretto for *The Creation*.

Early in 1773, John Hunter experienced his first attack of *angina pectoris*, which frequently recurred, even from trivial stimuli.

There is a certain degree of doubt as to the exact date when he first began to deliver lectures on the principles and practice of surgery. It would, however, appear to have been around 1770, although they may then have been restricted to private pupils.

The first known advertisement for his lectures appeared in 1775, but no locus was mentioned. In 1776 and 1777, they were delivered in the anatomical museum, Great Windmill Street: and, from 1778 to 1782, at 28, Haymarket. So embarrassed was he as a lecturer that he always first took a dose of laudanum. Further, never relying on memory, he wrote everything on detached pieces of paper, which, not infrequently, he, inadvertently, placed in the wrong sequence.

In 1776, he was honoured by being

appointed Surgeon-Extraordinary to George III.

In the spring of 1783, John Hunter, then at the pinnacle of his surgical fame, purchased the remaining twenty-four years' lease of a house in Leicester Square and of another at its rear in Castle Street (now Charing Cross Road), besides the intervening ground. Thereafter, his lectures were delivered in Castle Street.

On this vacant ground, he erected (completed 1785) rooms and a spacious museum to accommodate his very extensive collection of specimens of comparative and pathological anatomy. The actual cost of his building was around £3,000 (his annual income was reputed to have then reached £5,000, and £6,000 shortly before his decease). It was his practice to exhibit the museum in October to physicians and surgeons: and in May to the nobility and gentlemen.

Interesting sidelights on John Hunter's lecturing are, fortunately, extant. For instance, James Parkinson's notes were published by his son in 1833. He attended the lectures in 1785, taking them down in shorthand. He confirmed that Hunter was a talented observer, a genius and an indefatigable worker. Also, that despite reading his manuscript, he was clumsy and awkward; and, at times, experienced considerable difficulty in clarifying points. Another excellent, illuminating transcript was published in 1835, prepared from notes taken in 1786-1787 by Henry Nathaniel Rumsey.

John Hunter's lectures, although frequently devoid of clear expression, were nevertheless realistic, even if, at times, his language was coarse. For instance,

it has been recorded that, when describing a case of gun-shot wounds, he referred to the ball as "having gone into the man's belly and hit his guts such a damned thump that they mortified". Also, on numerous occasions, he recounted his own case, in which secondary symptoms resulted from his having inadvertently inoculated himself, in 1767, with pus from a chancre, and declared "I knocked down the disease with mercury and killed it".

His liberal outlook is, nevertheless, unquestionably confirmed by this incident. Astley Cooper once queried a statement of Hunter's as being contrary to that uttered by him a year earlier. Hunter's characteristic rejoinder was:—"Very likely I did. I hope I grow wiser every year".

It was about 1780 that the deplorable disagreements and alienation, existing between William and John Hunter, reached a climax and they finally separated. It is, more or less generally, believed that these resulted from the fact that both brothers—equally ambitious, jealous and vying with one another—claimed to have executed certain preparations, which are now in the Hunterian Museum (William's collection) of the University of Glasgow. So profound was the resentment and estrangement that, when William died, John did not even attend his funeral. Further, William failed to mention John's name in his will; and bequeathed Long Calderwood to his nephew, Matthew Baillie (1761-1823). However, when the will had been proved, Baillie very generously ceded it to his uncle, John.

In 1786, John Hunter installed a private printing-press in 13, Castle Street

for publishing his books. The reason for this was that, when manuscripts were sold to booksellers (as had been done with those on the teeth), proof-sheets of any outstanding work were, not infrequently, sent to Dublin. This resulted in a cheap edition being on sale in London, contemporaneously with the original. The books printed at 13, Castle Street were:—*A Treatise on the venereal disease* (1786), with the second edition (1788); *Observations on certain parts of the human œconomy* (1786), with its second edition (1792); and *Directions for preserving animals, and parts of animals, for examination*, anonymously with neither place nor date.

William Sharp (1749-1824), the celebrated engraver, was a staunch friend and admirer of John Hunter. It was he, who persuaded him (much against his will) to have his portrait (Fig. I)

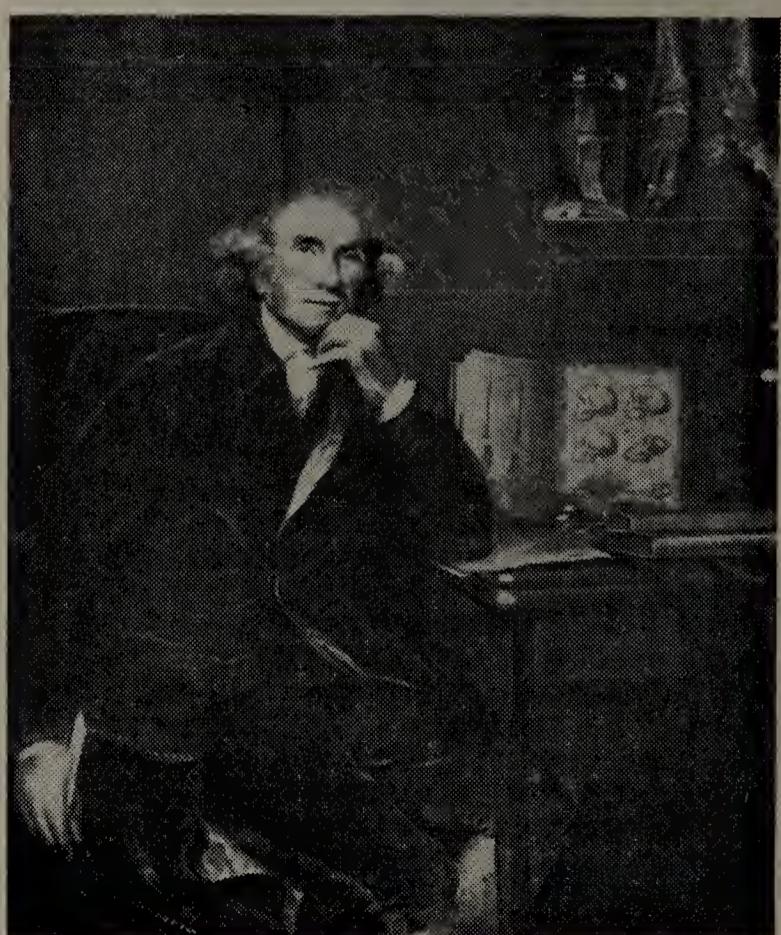


Fig. I JOHN HUNTER

by Sir Joshua Reynolds
(From the original in the possession of the
Royal College of Surgeons of England)

painted in 1787 by Sir Joshua Reynolds (1723-1792), England's greatest portrait painter. Although a most talented and excellent production (cost Hunter £105), nevertheless, it represented John Hunter as being unduly well groomed.

Sharp regarded his engraving of this—executed 1788—as his best work; not at all surprising, as Hunter's head was admirably suited to the burin.

In 1793, Sir Nathaniel Dance-Holland, Bart. (1735-1811), a highly successful painter of considerable distinction, executed a pencil sketch (Fig. 2) of him—probably the most faithful delineation extant.

On October 16, 1793, death came suddenly to John Hunter, while attending a meeting of the Board of Governors of St. George's Hospital. One of his statements was, then, vehemently contested. In the altercation that ensued, he became very irate; this precipitated an attack of *angina pectoris*, from which he almost immediately expired. He was buried quietly on October 22, 1793, in the crypt of the Church of St. Martin's-in-the-Fields in the presence of a few medical and other friends; but, on March 28, 1859, his body was re-interred in Westminster Abbey.

Readers may, naturally, be curious as to John Hunter's personal appearance. Contemporary reports revealed that he was of medium stature, robust build, short neck, prominent malar bones, projecting eyebrows and careless in his attire.

In the library of the Royal Faculty of Physicians and Surgeons of Glasgow (founded 1599), there is a manuscript volume of unique historical interest in the calligraphy of William Clift (1775-1849), John Hunter's faithful friend,

assistant and curator of his museum.

It reveals intimate details of his master's household and of his colossal expenditure, etc. Therein, it is stated that, in 1792, between the establishments in Leicester Square, Castle Street and Earl's Court, there were never fewer than fifty persons, excluding the resident-pupils, to be provided for daily at John Hunter's expense.

It is not, therefore, surprising that Clift added this significant comment “ . . . serve only to make one wonder that Mr. Hunter had not died more deeply involved; or that he should have left anything for the support of his family after all his debts were liquidated.” Truly, his earnings were spent in the pursuit of science!

John Hunter, in his will, appointed his widow, Everard Home (brother-in-law) and Mathew Baillie (nephew) as executors.

He, however, entrusted to the two latter:—the sale of his property at Earl's



Fig. 2 JOHN HUNTER

by Sir Nathaniel Dance-Holland
(From the original in the possession of the
Royal College of Surgeons of England)

Court; and the disposal of the entire contents of his museum (upwards of 10,000 specimens) with the manuscripts and papers relating to it. Home was the acting-executor: Baillie being then in charge of William Hunter's museum at Great Windmill Street.

John Hunter's widow and family were left in very straitened circumstances. Consequently, there was no alternative for them but to move from 12, Leicester Square, which was let furnished within two months of his death. (Mrs. Hunter then became, for a period, companion to the daughters of a surgeon friend of her deceased husband.) The adjacent property, which housed the museum, continued to be occupied by William Clift and a house-keeper. In May, 1794, the abode at Earl's Court (demolished in 1886) and the zoo were sold.

According to a provision in John Hunter's will, his museum was to be offered for sale, in one lot, to the British government; if refused, then to any foreign power; and, failing acceptance, to be sold by auction in one lot.

In 1794, Parliament was approached, unsuccessfully however, in the hope that the museum, which cost Hunter upwards of £20,000, would be acquired by the nation.

Two years later, a further petition was presented. This was referred to a committee to investigate and report on the monetary and educational value of the museum. Proceedings were protracted. In June, 1799, the committee recommended to Parliament that £15,000 should be paid for it.

In January, 1800, the custody of the museum was entrusted to the Royal College of Surgeons, among the condi-

tions being the appointment by them of a Board of Curators (to act in conjunction with a Board of Trustees nominated by Parliament), and a conservator: also, the preparation of a catalogue.

It ought, at this stage, to be mentioned that, in 1799, prior to negotiations being finally concluded, Everard Home (an efficient practical surgeon with an extensive practice) instructed William Clift to transfer, to his house in Sackville Street, John Hunter's folio volumes and fasciculi of manuscripts describing the various preparations, and his investigations concerning them. Although Clift disliked Home, he was obliged to comply with the wishes of the acting-executor.

In 1806, the contents of the museum (a veritable Valhalla!) were removed from Castle Street to Lincoln's Inn Fields, where the Royal College of Surgeons had erected a new building to accommodate them: and Clift officially appointed conservator.

In July, 1823, Everard Home informed Clift and others that, in accordance with the instructions of his deceased brother-in-law, he had burned all his papers. There is no evidence that Hunter ever issued any such directions.

This base conduct was reported by Clift at a meeting of the Board of Curators in 1824. As it seemed so utterly incredible, Home was, on several occasions, requested to deliver all the documents, which were so essential for compiling a proper catalogue of John Hunter's museum.

In view of Home's persistent non-compliance with these demands, and the subtle pretexts advanced for burn-

ing the papers, the circumstances were recounted to the Board of Trustees. Their efforts, likewise, proved futile. Practically all Hunter's papers and manuscripts—the labours of forty years—had ended in smoke! It is a tragic coincidence that, in 1941, his museum was ~~entirely~~ ^{accidentally} destroyed by bombs from enemy aircraft!

Now to refer to the vandal, Everard Home, whose outrageous conduct it is, today, surprisingly fashionable to attempt to vindicate!

In 1808, doubtless in recognition of the *rôle*, which he had played in the acquisition by the nation of Hunter's museum, and of his own scientific writings, he was appointed Sergeant-Surgeon to George III. Further, in 1813, he was not only elected Master of the Royal College of Surgeons, but also created a baronet. Why, therefore, should he have destroyed John Hunter's papers?

The view, generally, accepted by historians is that Everard Home, having pirated John Hunter's priceless, unpublished records, decided to burn the damning evidence.

Be that as it may, it is significant that, within the period 1799 to 1823, Everard Home, who likewise was keenly interested in comparative anatomy, published a wide range of articles (of a similar type to John Hunter's) under his own name in various scientific journals. In fact, he contributed more papers to the Royal Society than any other person, since its foundation in 1645!

Jessé Foot, with an extensive surgical practice in Dean Street, Soho, published, in 1794, a hostile—in very many respects, distorted—life of John Hun-

ter. For this, he may justifiably be stigmatized as an unworthy Foot-man! Nevertheless, Home's ruthless conduct far eclipsed Foot's effort.

Further, Foot (who is credited with writing sixteen works) described Home as both conceited and insolent. William Clift's opinion of him, viewed from more intimate angles, was also uncomplimentary.

Having now briefly traced John Hunter's career, and thereby afforded readers an opportunity better to appreciate his background, let us consider, in necessarily restricted detail, his dental works of 1771 and 1778.

Before doing so, it should be emphasized that, when these were published, dentistry in England was on a much lower plane than any other branch of the healing art. This is not surprising, when it is realized that its practice was controlled almost exclusively by empirics and blacksmiths, whose knowledge was derived chiefly from a process of trial and error. Treatment was confined to the non-too-skilful extraction of teeth, the inexpert construction of bone or ivory substitutes and crude attempts to fill carious cavities.

The inquiring mind was, more or less, non-existent. Comparatively few practitioners considered the underlying causes of dental disease. They were content merely to accept such conditions as inevitable, and themselves as benefactors to humanity!

The purpose of John Hunter's books was, undoubtedly, to enlighten such persons. His efforts would, however, have proved even more beneficial, had he riveted attention (as Berdmore did in 1768) on the far-reaching dangers resulting from unskilled interference; and

sounded a clarion-call to the public to consult only competent practitioners.

His publications were momentous in their impact and aroused widespread interest. This was inevitable, because people generally knew of him and were aware of his accustomed accuracy and sound judgment.

Nevertheless, it must straightway be conceded that John Hunter's 1771 and 1778 volumes were, by no means, free from error. It is, therefore, with considerable diffidence and a full sense of appreciation of his eminence, that the writer embarks on a *résumé* of his dental works. In order to enable readers more readily to refer to relevant passages, it has been decided to treat these two quartos separately.

John Hunter stated that most of the observations incorporated in *The Natural history of the human teeth . . .* (1771) were made by him prior to 1755; and these he had demonstrated in his brother's course of lectures. From this, it may be assumed that such investigations had been carried out on *cadavers*, which he had acquired through the "resurrectionists".

This volume was illustrated by sixteen beautifully executed plates, to which full explanations were attached. They were drawn by Van Rynsdyk under John Hunter's close supervision; and engraved by Robert Strange, Charles Grignion and William Ryland.

Hunter's conclusions concerning the development and articulation of the maxilla and the mandible with their associated muscles were particularly ably outlined. It is a remarkable fact that they do not differ appreciably from those, which are, today, accepted by anatomists.

In outlining the structure of a tooth, Hunter stated that this comprised two substances, enamel and bone. It ought, however, to be mentioned that his conception of 'bone' was what are now termed dentine and cementum.

He, nevertheless, regarded the teeth as "extraneous" and "non-vascular", because, among other reasons, throughout his numerous experiments, he had failed to inject them; possibly, this was due to the density of his medium! Consequently, John Hunter did not believe that constitutional disorders (e.g. rickets) affected the teeth.

Doubtless, the declaration that teeth were inorganic, emanating from a person of Hunter's repute, tended to retard their more scientific treatment: and, indirectly, stimulated progress in the prosthetic branch.

Although he was lucid and masterly in his account of the permanent teeth (termed by him *incisores*, *cuspidati*, *bicuspides* and *molares*) and their calcification, it is, nevertheless, very surprising that he omitted to describe the individual temporary teeth.

Further, he had noted that teeth, when completely formed, ceased to grow like other bone. He controverted the then prevalent view that they were in a state of continuous growth, succinctly explaining that, in those cases where they lengthened, their normal antagonists were missing.

He was singularly inaccurate, when he stated that the first permanent teeth erupted about the twelfth year: and the second ones about the eighteenth year. A not improbable explanation is that he relied upon the "resurrectionists" for evidence as to age.

Discussing the shedding of the temporary teeth, Hunter was firmly of opinion that this was in accordance with the laws of nature. Also, that their successors did not exert any mechanical influence during the transition period. He deprecated the extraction of a superimposed temporary tooth to enable the underlying permanent one to erupt properly. Instead, he advocated the removal of the adjacent posterior temporary tooth and probably "always" the first permanent molar. Obviously, he was unaware of the *sequelæ* of such ruthless procedure.

Although Hunter certainly recognized the *antrum* of Highmore and the maxillary sinus as being identical, it was, nevertheless, confusing to the untutored, when he referred in one paragraph to the former, and in another, to the latter! It is very surprising that he omitted to give any description, whatsoever, of this important air-space, or to proffer a suggestion as to its function.

It was strange that Hunter, despite scientific knowledge, preferred the vertical extraction of teeth, although adding that this was not always practicable due to the instruments then in use. Doubtless, encouragement, emanating from such an authoritative figure, was responsible, at least indirectly, for the marketing of several improved instruments for this purpose. Even as late as 1842, John Gray (1812-1863) of Old Burlington Street, London, enthusiastically recommended his special appliances for this particular method of removing teeth.

Hunter was an ardent protagonist of "Transplanting the Teeth". Realizing from his study of *cadavers* the difficulty of finding teeth accurately to fit a

socket, he stressed that this could readily be circumvented by ensuring that the root of a tooth to be transplanted should be of lesser circumference than the alveolar socket to receive it. He was convinced that the last-mentioned grew to overcome any deficiency, basing this belief on the natural tendency of all vital tissues to unite when closely approximated, even when the circulation was sustained by only one of them.

These are but a few points selected from his work of 1771. Although attention has been drawn to certain divergences from fact, these can, in no manner whatsoever, deflect from his magnificent exposition on the anatomy and physiology of the teeth and their surrounding parts.

We shall now pass to a consideration of John Hunter's *A Practical treatise on the diseases of the teeth . . .* (1778).

His Introduction defined its scope. Freed from verbal obscurity, his preamble was that the treatment of e.g. an abscess, arising from a tooth but infiltrating the surrounding bone, was solely the responsibility of a surgeon. Diseases of the teeth, gums and alveolar processes were the concern of a dentist, who, consequently, should treat them. He added that he did not intend to enter the realms of general surgery, as this would take the dentist, to quote his own words, "beyond his depth".

Hunter presented a very adequate clinical picture of the various stages of "Decay of the Teeth Arising from Rotteness": this he termed "Mortification". He stated that its onset was usually heralded by an opaque white spot, which later became dark brown. He added that the mandibular "fore teeth" (incisors) were less susceptible

than any of the others. Further, that this disease, peculiar to youth, very rarely occurred after the age of fifty. He was undecided as to whether or not a decaying tooth could affect an adjoining one.

He described the various stages of untreated inflammation of the teeth—pain due to an exposed cavity, and swellings of the gums, soft tissues and bone. He explained that such inflammation often gradually subsided, despite the destructive action of pus.

His treatment of this disorder was signally extraordinary. For instance, when a considerable portion of a molar tooth remained, Hunter advised that it should be extracted, immediately boiled and replaced in its alveolar socket. He stated that such a tooth, being then "dead", was immune from disease, although still liable to chemical or mechanical action.

When a patient declined to submit to this regimen, Hunter recommended that the nerve of the tooth should be burned with concentrated sulphuric acid, nitric acid, or a caustic. However, when discomfort was restricted to pain in a tooth, he advised burning the ear with 'hot irons'; the application of poultices; hot brandy; laudanum; or sniffing spirit of lavender.

Nevertheless, it ought to be mentioned that, in some cases, he recommended that cavities in the teeth should be filled with gold leaf or any form of lead. He added that, although wax or galbanum were of only minor value for this purpose, they, nevertheless, proved useful for home application by a sufferer.

Hunter presented a graphically excellent picture of empyema of the *an-*

trum of Highmore, recounting such cardinal symptoms as infra-orbital inflammation, severe frontal pain, erythema and thickening in the region of the malar bone. His treatment was sound. In all cases, he insisted on establishing an outlet for pus. This was achieved either by penetrating the *antrum* through the nose; or, after extracting a molar tooth, through its alveolar socket. However, when there had already been destruction of bone, he considered that it was sometimes advisable to effect entrance from the under surface of the lip at the site of the swelling.

He, very accurately, detailed tender, bleeding, ulcerating gums, with a discharge of pus and alveolar absorption, as the classical symptoms of "Scurvy in the Gums" (*pyorrhœa alveolaris*). Regarding treatment, he reservedly recommended what is now termed gingivectomy, explaining that the benefits therefrom were mainly due to the resulting haemorrhage. He added that, often, there was equally marked improvement from scarification of the gingival tissues. The discerning John Hunter was, by no means, convinced that this disease was solely of local origin. Instead, he suspected that, frequently, it was symptomatic of constitutional scurvy; in such cases, he strenuously advocated sea-bathing and a mouth-wash of salt water.

His chapter on "Nervous Pains in The Jaws" (*tic douloureux*) is of supreme importance, and evidence of profound thought. He cited cases where there was also pain in the teeth, thus creating the erroneous impression that it had originated in them. This resulted in the empirical treatment of

extracting one tooth after another, until, not infrequently, all on the affected side had been fruitlessly sacrificed! Hunter stressed that such a complaint was solely of nervous origin, often the outcome of sustained tension. Although he detailed certain remedies, that sometimes relieved suffering, he was firmly of opinion that sea-bathing was singularly effective.

Hunter's comments on 'Extraneous Matter Upon The Teeth' (salivary calculus) were proof of close observation and sound advice. He explained that neglect of such deposits was responsible for irritated, bleeding and receding gums, besides absorption of the alveolar processes. Also, that they were very liable to occur on molar teeth, which were not used efficiently for mastication and where the opposing ones were missing. Further, he pointed out that such an accumulation often started during illness, when the content of the saliva was abnormal: also, in pregnancy. For its removal, he recommended friction, filing and picking: also, chemical solvents.

Hunter riveted attention on prevention by stating that persons, who ate sufficient fruits and salads, were almost immune, because acids therefrom prevented the formation of deposits.

In discussing "Irregularities of The Teeth", he mentioned that these were, most frequently, discernible on the maxillary permanent incisors and cuspids, ascribing this to their being larger than their precursors; and to unduly long retention of the last-mentioned. He stressed the importance of early treatment, if a satisfactory result were to be attained. Generally, for this, the application of pressure from ligatures

or plates constructed of silver was indicated. The choice of procedure best suited for a case must, nevertheless, be left to the dentist: no two abnormalities being alike. He cited instances where, in his opinion, judicious extraction yielded infinitely more satisfactory results than was possible by any apparatus. There is no doubt, whatsoever, that his advice on this particular subject was remarkably sound.

Hunter acknowledged that, generally, there did not appear to be any unfavourable *sequelæ* to the prevailing practice of extracting teeth in the presence of inflammation. Nevertheless, he seemed to be partial to delaying this operation until the gums were normal.

He cautioned against extracting a tooth quickly, as this might readily result in fracturing it, as well as the jaw-bone. However, should a root, unfortunately remain, he advised that, if possible, it should be extracted. He stated that should this be either inadvisable or impossible, nature would, eventually, shed the fragment, although spasmodic pain was likely in the interval.

With marked haemorrhage as a sequel to extraction, he advised packing the alveolar socket with lint immersed in oil of turpentine: or inserting a cork between the socket and the opposing tooth, in order to maintain steady pressure.

In this volume, he discussed "Transplanting Teeth" more minutely than in his earlier one; and stressed that sound teeth (incisors and cuspids being the most suitable) from the mouth of a young healthy subject should be preferred: also, that a tooth should not be transplanted into a diseased socket.

To present-day readers, it must seem extraordinary that Hunter advised a dentist, when performing transplantation, to have several persons in attendance, all of whose teeth he considered were likely accurately to fit the socket of the one about to be extracted. If the first person's tooth did not suit, the corresponding one from the next was straightway extracted, tried in . . . and so on until he was satisfied. How complacent these misguided victims seem to have been, even in spite of remuneration! The next step, Hunter explained, was to immobilize the transplanted tooth (termed by him "scion tooth") by ligaturing it to the adjacent teeth. The patient was instructed to rest the affected area in order to promote union, which was sometimes complete in a few days. He acknowledged that not every case proved successful. When an alveolar abscess developed, the tooth became loose and was often eventually shed.

It is, however, surprising that anyone, endowed with John Hunter's superior knowledge, based on scientific research and experience, should not only have countenanced, but also advocated, such a highly objectionable practice. It is undeniable that this acted as a decided filip to the craze. Four factors were, probably, chiefly responsible for the cessation of the practice:—(a) repeated failures, (b) notable advancements in dental prosthesis such as the introduction of De Chémant's mineral paste teeth, then a very decided improvement on all other efforts, (c) the serious risk of transmitting disease, and (d) ridicule.

In fairness, it must be conceded that, although excellent in parts, John Hunter's dental work of 1778 was decidedly

inferior to that of 1771, because, in many instances, his hypotheses were faulty. Had he been a practising dentist, and consequently able to observe and correlate the results of treatment over a lengthened period, he would certainly not have stumbled into so many of the morasses that beset the unwary.

Unfortunately, erroneous views, emanating from a person with an established reputation, are, at all times, much more devastating than those expressed by a lesser luminary.

A probable reason for John Hunter deciding to write his 1778 volume was the specialized knowledge and encouragement, which he derived from his several dentist friends and acquaintances.

As has already been stated, he had for long been on very intimate terms with James Spence and his two sons, all three practising dentists. He was friendly with Martin Van Butchell (1735-1814), the fashionable dentist of Mount Street, Berkeley Square. Although the exact date is uncertain, he had been a pupil of John Hunter. Further, there was William Rae, a scientific skilful dentist, who, in the 1770's, practised in Adam Street, Adelphi. In fact, not later than 1785, he delivered, on John Hunter's invitation, a course of lectures on the teeth in his house in Castle Street.

There is no doubt that John Hunter (an adherent to truth and honesty) was mainly responsible for the spread of scientific surgery in the eighteenth and nineteenth centuries in England. Prior to that date, it was almost entirely under French control.

Unfortunately, the irascible, tactless

and overbearing attitude, which he was prone to adopt towards even colleagues of standing, was exasperating and regrettable. At the same time, it should be realized that contemporary surgeons generally were "empirical" rather than scientific in their methods of treatment. Besides, the majority of them regarded him as an enthusiastic innovator, who was more interested in physiology and pathology than in the actual practice of surgery.

This passage from the will of Francis Bacon (1561-1626), who, in 1618, was raised to the peerage as Baron Verulam, is even more appropriate in

the case of John Hunter:— ". . . For my name and memory, I leave it to men's charitable speeches, and to foreign nations, and the next ages . . ." John Hunter's renown certainly remains undimmed after two centuries. He can be justly evaluated, *only* when viewed in retrospect.

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